



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : F23D 11/36</p>	<p>A1</p>	<p>(11) International Publication Number: WO 99/46539</p> <p>(43) International Publication Date: 16 September 1999 (16.09.99)</p>
<p>(21) International Application Number: PCT/US99/05050</p> <p>(22) International Filing Date: 9 March 1999 (09.03.99)</p> <p>(30) Priority Data: 1998/3553 11 March 1998 (11.03.98) KR</p> <p>(71) Applicant (for all designated States except US): CALICO BRANDS, INC. [US/US]; 13455 Estelle Street, Corona, CA 91719 (US).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): JON, Jong-Koo [KR/KR]; 117-dong, Apartment 1401 Hyun-dae Apartment, 307, Bun-ji, San-gog 3 dong, Bupyung gu, In-cheon, Kwang-yeoksi (KR).</p> <p>(74) Agent: TROJAN, R., Joseph; Trojan Law Offices, Suite 325, 9250 Wilshire Boulevard, Beverly Hills, CA 90212 (US).</p>		<p>(81) Designated States: CA, CN, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published With international search report.</p>
<p>(54) Title: FLINT GAS LIGHTER WITH IGNITION RESISTANT MECHANISM</p>		
<p>(57) Abstract</p> <p>A child resistant lighter comprising a standard lighter construction, the improvement comprising an ignition resistance button (B), whereby the ignition resistance button (B) hinders a child's ability to engage the nozzle lever (8) needed to operate the lighter.</p> <div data-bbox="860 1155 1445 1848"> </div>		

BEST AVAILABLE COPY

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Larvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

DESCRIPTION

5

FLINT GAS LIGHTER WITH IGNITION RESISTANT MECHANISM

10

1. TECHNICAL FIELD:

This invention relates to child-resistant lighters.

15

2. BACKGROUND ART:

The simplicity and ease in operating a standard lighter
20 poses a potential fire hazard when it falls in the hands of
children. As an alternative, a number of lighters have been
introduced to consumers with various ignition resistance
25 devices to prevent use by children. Figure 6 is an example
of an alternative lighter with an ignition resistance
30 device. The ignition resistance device depicted on Figure 6
utilizes a protuded ledge, stopper, and compression lever to
deter the movement of the nozzle lever. During operation,
35 the compression lever is pushed down pressing the stopper
inward causing the protuded lever to be wedged against the
40 nozzle lever and preventing the nozzle lever to move
downward. The benefit of using this type of lighter
equipped with a compression lever as an ignition-deterrent
45 device is its effectiveness in preventing children's use.
The downside, however, is the inconvenience of having to
50 move the compression lever upward each time when a user
needs to ignite the lighter. In addition, the complicated
structure increases the cost of manufacture.

In an effort to solve the problems above, other types

SUBSTITUTE SHEET (RULE 26)

of lighters were introduced that contained ignition
resistance devices, but were simpler (One Touch) in
5 operation. Figure 7 illustrates an example of such a One
Touch lighter. The One Touch lighter depicted in Figure 7
10 utilizes an elastic wheel located on top of the spark wheel
and connected to the metal cap. During operation, a user
must apply enough force to the elastic wheel to turn the
15 side wheel to create a spark.

The advantage of using a One Touch lighter is that the
20 user can produce an ignition with one-touch operation.
However, it is inconvenient to use in the sense that a user
has to apply more force to the side wheels than he would
25 with the standard lighter. Furthermore, given that the
metal cap and the elastic wheel are positioned at the point
30 where the flame is emitted, there is a potential for the
user's thumb and fingers to be burned.

3. DISCLOSURE OF INVENTION:

35 The present invention is a cigarette-lighter with an
ignition resistance mechanism. The lighter has an ignition
40 resistance button which must be depressed simultaneously
with the release lever which make ignition of the lighter
difficult by increasing the requisite amount of force and
45 manual dexterity needed to ignite the lighter.
Additionally, the invention adds additional analytical steps
50 to the operation of the lighter to further hinder the
ability of small children to use the lighter.

These and other objects and advantages of the present
invention will become apparent from the following detailed

description of the preferred embodiment of the invention without intending to limit the scope of the invention which is set forth in the appended claims.

4. BRIEF DESCRIPTION OF DRAWINGS:

The advantages of the invention can be more clearly understood by reference to the drawings in which:

Figure 1 is a perspective view of the invention

Figure 2 is a cross-sectional view of the area specified as 2-2 in the Figure 1

Figure 2A is a magnified cross-sectional view of the ignition resistance button as specified as area 2A in the Figure 2

Figure 3 is a profile view of the invention while in use

Figure 4 is a perspective view of a conventional gas lighter

Figure 5 is a profile view of a conventional gas lighter illustrating the internal mechanical structure

Figure 6 is a perspective view of a prior art lighter with an ignition resistance device

Figure 7 is a perspective view of a prior art lighter with a one touch ignition resistance device

Figure 8 is a profile view of a prior art lighter with a one touch ignition resistance device illustrating the internal mechanical structure

5. BEST MODE FOR CARRYING OUT THE INVENTION AND INDUSTRIAL APPLICABILITY:

Figures 1 through 3 generally illustrate the present invention, a child resistant lighter, in one of its

preferred embodiments. The lighter is constructed of a tank cap (2) connected upward to a gas tank (1) and is securely fastened to the gas tank (2) by a bracket (3). The tank cap (2) includes a gas supply pipe (5) encompassed by the gas tank (1) and attached to the burner assembly (7). A nozzle (6) protudes from the burner assembly (7) and is engaged by a nozzle lever (8) to open and close the nozzle (6). A flint (9) is located within a vacuum area of the tank cap (2) and biased upward by a flint spring (9A). A spark wheel (10) is in contact with the flint (9) and is connected to a side wheel (11). During operation, the user rotates the side wheel (11) with his thumb and simultaneously, depresses the nozzle lever (8) causing the side wheel (11) to rotate the spark wheel (10) against the flint (9) producing sparks which eventually result in ignition with the gas emitted from the nozzle (6) that opens up from the depression of the nozzle lever (8). A metal cap (4) encloses the nozzle (6) and burner assembly (7) to protect the flame.

The new and novel improvement of the present invention includes the addition of an ignition resistance button (B). The ignition resistance button (B) is contained within a vacuum area (2A) and is biased upward by an elastic spring (S) to traverse through the nozzle lever (8). An air way (8B) surrounds the ignition resistance button (B) at the point that the ignition resistance button (B) traverses through the nozzle lever (8) to permit the ignition resistance button (B) to move independent of the nozzle lever (8). During operation, the ignition resistance

button (8) is depressed to the finger pad (8A) wherein the
ignition resistance button (B) and the nozzle lever (8) are
5 depressed simultaneously to open the nozzle (6) and
emitting gas to be ignited.

10 The lighter is difficult for a young child to operate
by increasing the requisite amount of force and manual
dexterity needed to ignite the lighter. A child's thumb is
15 not sufficiently strong to depress the ignition resistance
button (B) to the finger pad (8A) and thereby prevents
engagement of the nozzle lever (8). Moreover, because the
20 nozzle lever (8) is not depressed, the nozzle (6) is not
engaged and gas is not released. Additionally, the
25 invention adds additional analytical steps to the process of
understanding the operation of the lighter to further hinder
the ability of small children to use the lighter.

30

35

40

45

50

What is claimed is:

1. A child-resistant lighter having a gas tank (1)
5 for containing a combustible fuel, a gas release means in
communication with said gas tank (1), including a burner
assembly (7) and a nozzle (6) cooperating with a nozzle
10 release lever (8) for selective actuation between a normally
closed nozzle position, which prevents exit of combustible
15 fuel from said gas tank (1), and an open position which
permits exit of combustible fuel from said gas tank (1)
through said nozzle, said nozzle lever (8) including a
20 finger pad (8A) for actuation of said nozzle lever (8) by a
user, a side wheel (11) having a radius and attached to a
25 spark wheel (10) for interacting with a flint (9) biased
against said spark wheel (10), the improvement comprising:
30 an ignition resistance button (B) contained with a
vacuum area (2A) and biased upward by spring (S) to traverse
through the nozzle release lever (8) and is surrounded by an
35 air way (8B) to permit the ignition resistance button (B) to
move independent of the nozzle release lever lever (8).

40

45

50

1/4

FIG. 1

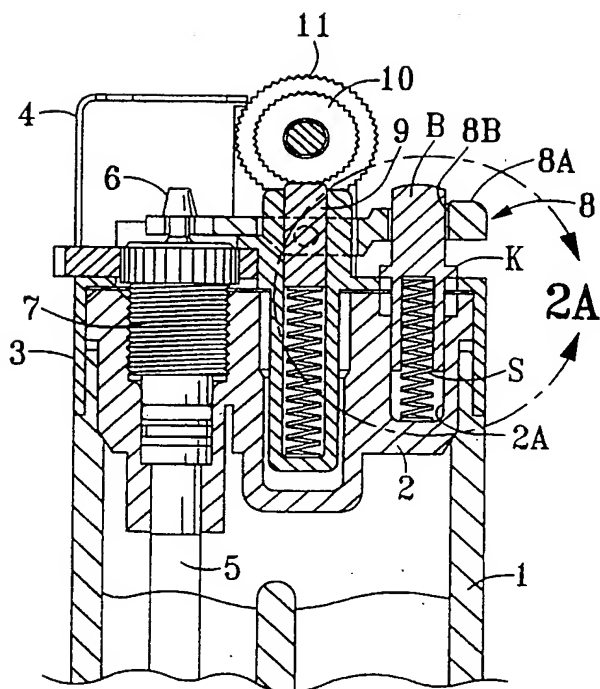
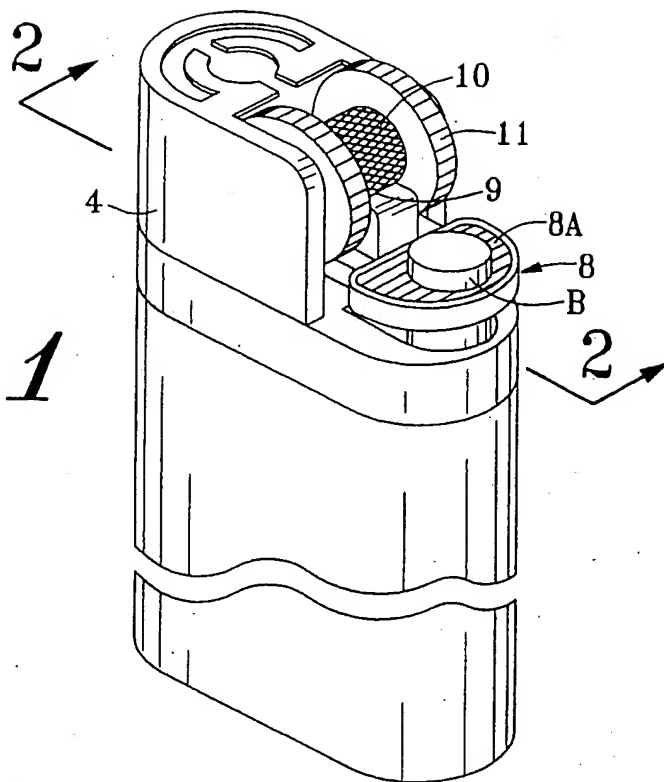


FIG. 2

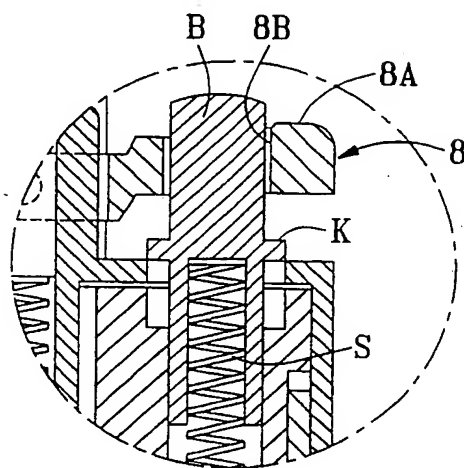


FIG. 2A

2/4

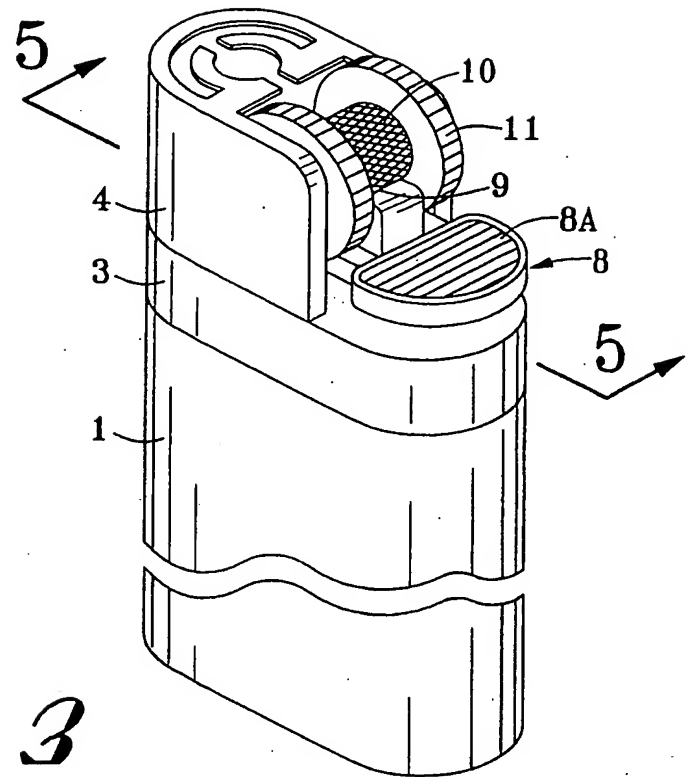
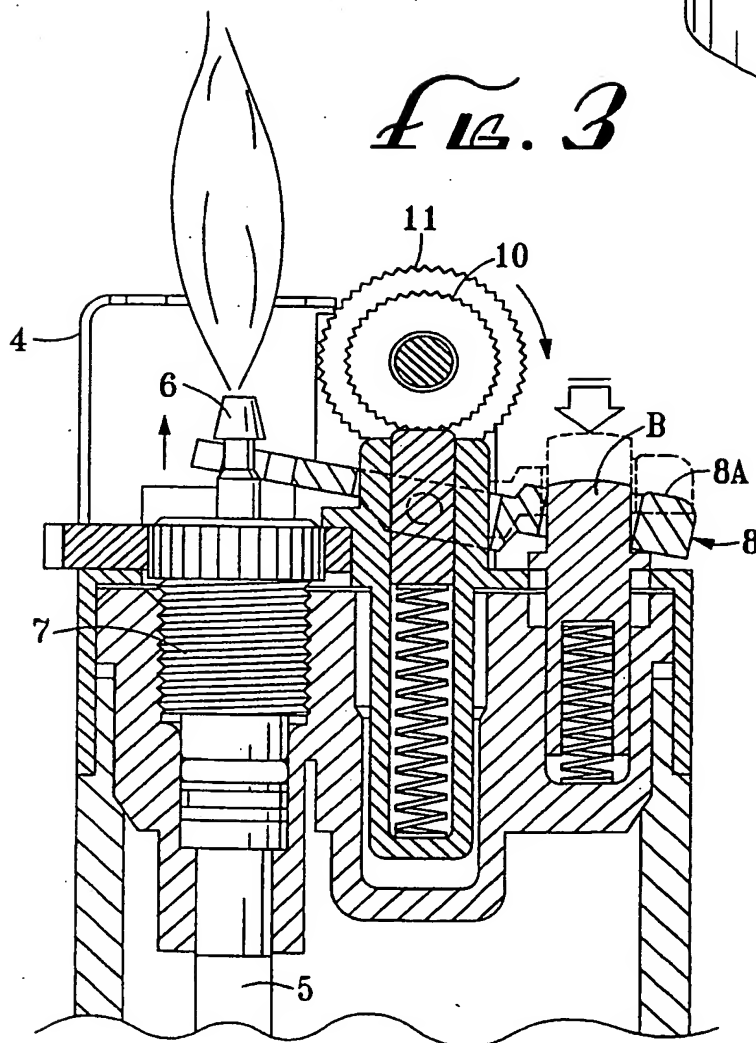


Fig. 3

Fig. 4



3/4

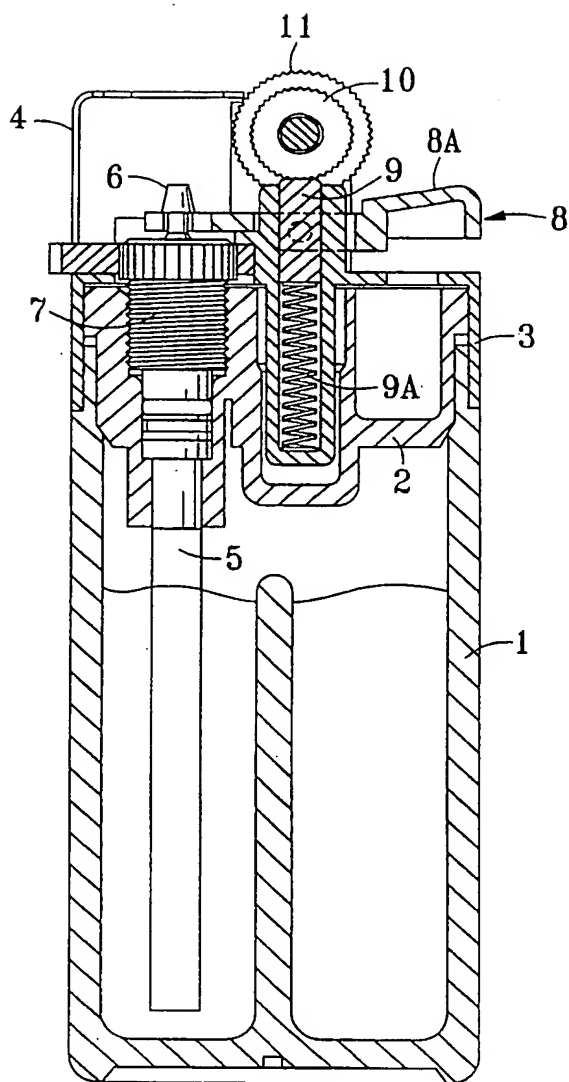


Fig. 5

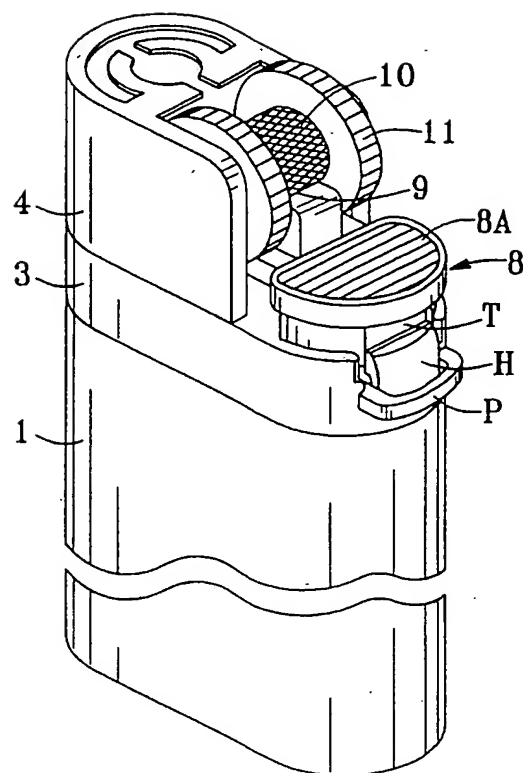


Fig. 6

4/4

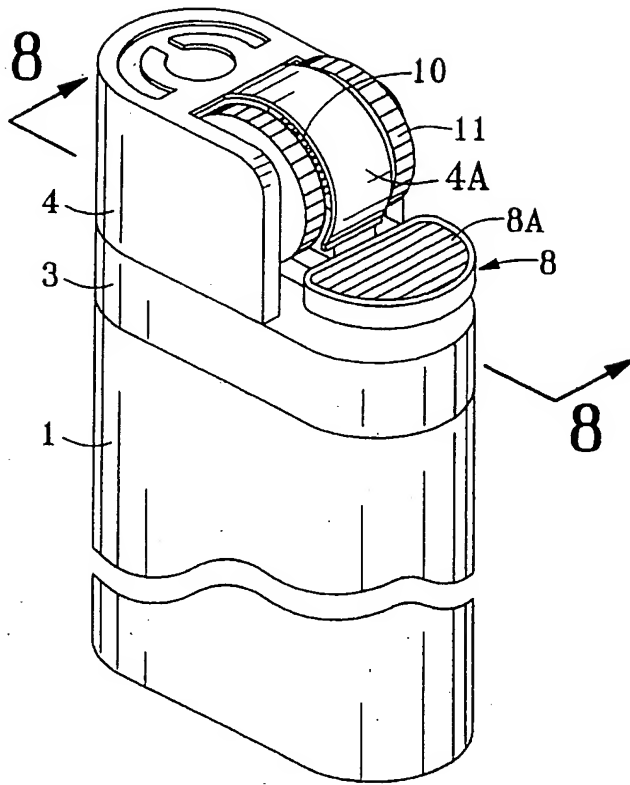


Fig. 7

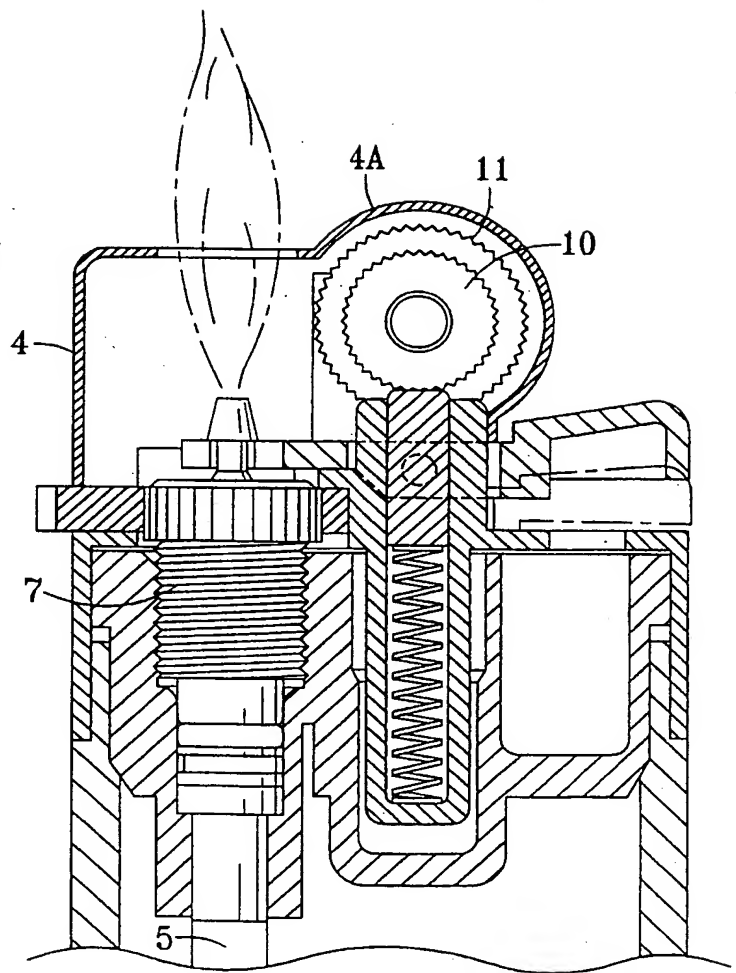


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/05050

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :F23D 11/36

US CL :431/153

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. :

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,427,522 A (Mc DONOUGH ET AL) 27 JUNE 1995 SEE ENTIRE DOCUMENT.	1

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

04 MAY 1999

Date of mailing of the international search report

25 MAY 1999

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

CARROLL DORITY

Telephone No. (703) 308-1437

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ **BLACK BORDERS**
- ☒ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☒ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.